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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,084	10/28/2001	Alok Dev	US 010292	5316

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[REDACTED] EXAMINER

FOONG, SUK SAN

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2823

DATE MAILED: 03/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/894,084	DEV, ALOK
	Examiner	Art Unit
	Suk-San Foong	2823

The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

THE MAILING DATE OF THIS COMMUNICATION: Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication. If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely. If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication. Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 26 December 2002.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1,3-8 and 18-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1,3-8 and 18-20 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)  The proposed drawing correction filed on \_\_\_\_\_ is: a)  approved b)  disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)  The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.  
14)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a)  The translation of the foreign language provisional application has been received.  
15)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1)  Notice of References Cited (PTO-892) 4)  Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948) 5)  Notice of Informal Patent Application (PTO-152)  
3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6)  Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-6, 8 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lillienfeld et al. ('322) in combination with Baliga et al. ('412), as previously applied, and Cox et al. ('508).

The rejection is maintained as stated in paragraph 6 of the Office Action mailed on 10/2/02 and as follows.

The combination process does not disclose the step of lifting-off conductive material deposited over mask.

The combination process does not disclose the step of treating exposed portion of the wafer and is selected from a group as recited in claim 6, lines 3-5.

Lillenfield et al. discloses at Col. 4, lines 66-68 that the removal of mask 12 is optional prior to deposition of conductive layer over surface of substrate.

Cox et al. discloses a method of forming contact for semiconductor devices which includes proving wafer (Col. 2, lines 62-63, and Fig. 1), then forming insulating layer 3 such as oxide (Col. 2, lines 70-71), then placing mask 2 having windows over exposed surface of insulating layer 3 (Col. 3, lines 1-3), then applying a treatment such as chemical cleaning to interface 10 of wafer (Col. 3, lines 27-36), subsequently depositing conductive material 7 and 8, or 20 on mask 2 and at interface 10 of wafer (Col. 3, lines 4-23, and Fig. 2), and then removing

or lifting-off portions of conductive material 20 deposited on mask 2 by removing mask 2 (Col. 3, lines 66-70, Col. 4, lines 21-27 and Fig. 3).

In view of the disclosure of Lillenfeld et al., it would have been within the scope to one ordinary skill in the art to combine the teachings of Cox et al. with the combination process because it would enable formation of contact in the opening of insulating layer of the combination process to be performed and obtain further advantage of producing well-defined metallic contact and elimination the need of using etch solutions to remove any unwanted metal (Cox et al., Col. 2, lines 30-32).

It would have been within the scope to one ordinary skill in the art to combine the teachings of Cox et al. with the combination process because it would enable cleaning the surface of wafer 10 before depositing conductive material of the combination process and obtain further advantage of maintaining wafer surface relatively free of any oxide (Cox et al., Col. 3, lines 27-30).

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lillienfeld et al. ('322) in combination with Baliga et al. ('412) and Cox et al. ('508) as applied to claims 1-6, 8 and 18-20 above, and further in view of Thero et al. ('232) as previously applied.

The rejection is maintained as stated in paragraph 7 of the Office Action mailed on 10/2/02.

***Response to Arguments***

4. Applicant argues that Lillienfeld et al. teaches removing the mask before deposition of conductive material. However, Lillienfeld et al. teaches that the removal of the mask prior to depositing conductive material is an optional step at Col. 4, lines 66-68.

5. Applicant argues the advantages of using lift-off to pattern the conductive material. However, the stated advantages would be obtained with the process of the combination because the same materials are treated in the same manner as in the instant invention.

### *Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, CFR 1.136(a) will be calculated from the mailing date of the advisory action.

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suk-San Foong whose telephone number is 703-305-0383. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 (7724, 3431, 3432).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

gk  
February 26, 2003

  
George Fourson  
Primary Examiner  
Art Unit 2823